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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,863	12/08/2000	Akihito Tsuchiya	001611	8842

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ARMSTRONG, WESTERMAN & HATTORI, LLP  
1725 K STREET, NW.  
SUITE 1000  
WASHINGTON, DC 20006

EXAMINER

BEISNER, WILLIAM H

ART UNIT PAPER NUMBER

1744

7

DATE MAILED: 09/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/731,863

Applicant(s)

TSUCHIYA, AKIHITO

Examiner

William H. Beisner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-9 and 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-9 are indefinite because it is not clear what positively recited method steps cover the metes and bounds of the claim. Currently the claim recites a preamble of "purification treatment of an environmental pollutant" while the body of the claim fails to positively recite any method steps which clearly define the process intended of the preamble. The claim is devoid of the traditional transitional phrase of "comprising" or "consisting". The claim will be examined as though the claimed method step is "making the environmental pollutant and microorganisms coexist with other while incorporated in a microorganism-produced polymer".

Claims 16-19 depend from claim 10 which recites a product. Claims 16 and 18 merely recited an intended use of the product of claim 10. It is not clear how the metes and bounds of the product are further limited by the language of claims 16-19. It is suggested that the

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positively recited elements of the product be further limited in claims 16-19. For example, “wherein the microorganism is capable of assimilation or degradation of the environmental pollutant”.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 10, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al.(US 4,954,443).

The reference of Yamada et al. discloses immobilization of microorganisms in a xanthan gum which is a microorganism-produced product. With respect to claims 16 and 17, the reference discloses the use of metal salts with the microorganism and polymer (See column 4, lines 40-68).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 6-12 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al.(US 4,971,698) in view of Yamada et al.(US 4,954,443).

The reference of Weber et al. discloses a method and product for treating environmental pollutants which includes immobilization of a microorganism in a gel-type organic polymer which is contacted with the environmental pollutant (See column 3, line 32 to column 4, line 57, for a list of environmental pollutants).

The above claim differ by specifying that the microorganisms are immobilized in a "microorganism-produced" polymer.

The reference of Yamada et al. discloses that it is known in the art to immobilize microorganisms within xanthan gum which is a microorganism-produced polymer. The reference also discloses the use of a cationic metal salt (See column 4, lines 40-68).

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to immobilize the microorganisms of the primary reference in a xanthan gum as suggested by Yamada et al. for the known and expected result of providing an

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alternative means recognized in the art to achieve the same result, immobilization of microorganisms for contact with a substrate to be acted on by the immobilized microorganisms.

With respect to the specifics of the microorganisms, the reference of Weber et al. discloses the use of *Pseudomonas* (See Example 5) and mixed cultures of microorganisms (See column 2, lines 1-27) for immobilization within the polymer.

9. Claims 2-5 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al.(US 4,971,698) in view of Yamada et al.(US 4,954,443) as applied to claims 1, 6-12 and 16-19 above, and further in view of Soon-Shiong et al.(US 5,700,848).

The combination of the references of Weber et al. and Yamada et al. have been discussed above.

While the reference of Yamada et al. is drawn to the microorganism-produced polymer, xanthan gum, the instant claims differ by reciting other microorganism-produced polymers, levan or polyamino acid polymer.

The reference of Soon-Shiong et al. discloses a list of known polymers in the art for the immobilization of microorganisms. The list discloses that levan and polyamino acids are equivalents to the xanthan gum of Yamada et al. and alginate, carrageenan and chitosan of Weber et al. (See column 6, lines 51 to column 7, line 6).

In view of this teaching and in the absence of a showing of criticality and/or unexpected results, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ any of the known polymer materials for immobilization of microorganisms while maintaining conditions which maintain the efficiency of the treatment system.

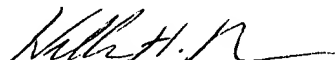
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*Conclusion*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Beisner whose telephone number is 703-308-4006. The examiner can normally be reached on Tues. to Fri. and alt. Mon. from 6:40am to 4:10pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Warden can be reached on 703-308-2920. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
William H. Beisner  
Primary Examiner  
Art Unit 1744

WHB  
September 11, 2002